USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Guide

SEA OATS

Uniola paniculata (L.)

Plant Symbol = UNPA

Contributed by: USDA NRCS Golden Meadow Plant Materials Center

Gary Fine, USDA-NRCS, 2000

Uses

Sea oats is exceptionally tolerant of harsh conditions associated with coastal beach environments, such as, salt spray, short inundation of saltwater from storm surges, strong winds, xeric soil conditions, and rapid sand accretion. It is considered an excellent pioneering species because its ability to rapidly establish and colonize on fore-dunes and dune crests, and a climax species because of its ability to persist in these extreme coastal beach conditions.

The attributes found in sea oats makes this species and excellent dune builder and sand stabilizer. Sea oats is an excellent conservation plant for dune building, dune enhancement, and sand stabilization on coastal beaches and barrier islands of the Atlantic, and Gulf of Mexico.

Status

This species is ranked on the Rare, Threatened, and Endangered Species state heritage conservation lists in Louisiana as a S2 - imperiled because of rarity (6 to 20 known extant populations) or because of some factors making if very vulnerable to extirpation, and a global ranking as a G5 - demonstrably secure globally although it may be quite rare in parts of its range, especially at the periphery (1000 + known extant populations).

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description

General: Sea oats is a native, warm-season, semi-tropical, rhizomatous perennial, C4 grass dominating many beach and dune environments. Culms are stout, erect 1-2 meters tall, nodes and internodes glabrous. Leaves are both basal and cauline with blades elongate to 60 cm long and 1.2 cm wide, both surfaces glabrous. The inflorescence is a large open panicle 8-15 cm long with flat yellowish spikelets, 10-20 flowered. Seed heads become a yellow-brown, straw color in late summer and into the fall.

Distribution: Sea oats occurs along the U.S. coast and barrier islands from Virginia through Florida, the Gulf coast, and south to Mexico. However, it is uncommon in Louisiana west of the Mississippi River delta over to Texas.

Habitat: Sea oats is typically found on loose sands of upper beaches, and the more exposed and accreting areas of dunes such as foredunes and dune crests. It is one of the few species that are able to establish and grow in this dynamic beach zone. Sea oats thrives and is actually stimulated where sand is actively accumulating. It is highly tolerant of xeric conditions, but sea oats does not tolerate water logging of roots, which will stress or kill plants within a few days. There are also beneficial microorganisms associated with the roots of sea oats. Vesicular-arbuscular mycorrhizal fungi are reported to increase the surface area of roots facilitating nutrient absorption and improving nutrition of sea oats communities.

Adaptation

Sea oats is an excellent pioneering species on upper beaches, fore-dunes, and dune crests, where loose sands accumulate. If is tolerant of salt spray, short periods of inundation by saltwater, rapid sand burial, and it is very drought tolerant. The extensive system of rhizomes and roots binds and holds blowing sands.

Establishment
Sea oats are generally established using vegetative propagules. Freshly dug bare-root plant divisions can be used effectively. Container grown plant materials have been proven to be more reliable in establishing stands. Propagation methods from plant division to micropropagation techniques are used.

Generally, no site preparation is needed when planting vegetative plant materials. Beach plantings are established by planting propagules on 2 to 5 feet centers. Spacing is dependent on site conditions, erosion potential, and desired outcome of the planting. Sea oats is relatively slow to establish, so planting faster growing companion species, such as, bitter panicum or other desirable pioneering species is recommended.

Generally, container grown plant materials can be planted year around, however, better results are achieved by planting mid-winter to early spring. Bare-root propagules should be planted November through March. Though sea oats are drought tolerant always consider site moisture conditions before planting. Since sea oats growing season varies considerably by geographic location, consult with local professionals when planning sea oats plantings.

Management
Restrict traffic during establishment. Sea oats can be effectively established and grow on low fertility soils without fertilization, however, if fertilization is desired for establishment purposes, apply 3.5-4.5 actual N per and 1.0- 1.5 pounds actual P per 1,000 square feet. Or place a slow release tablet with each plant when planting.

Pests and Potential Problems
There are no known serious pests associated with sea oats.

Environmental Concerns
There are no environmental concerns associated with sea oats. It is highly desirable and beneficial native species.

Cultivars, Improved, and Selected Materials (and area of origin)
The USDA NRCS Plant Materials Centers have one released one variety:

Caminada Germplasm sea oats is a pre-varietal release from the Golden Meadow Plant Materials Center, Galliano, Louisiana, selected to provide a plant for dune building, enhancement, and sand stabilization on coastal beaches and barrier islands of the Gulf of Mexico.

Contact your local Natural Resources Conservation Service office for more information. Look in the phone book under ”United States Government”. The Natural Resources Conservation Service will be listed under the subheading “Department of Agriculture.”

References
Duncan, W.H. and M.B. Duncan. 1987. *The Smithsonian guide to seaside plants of the Gulf and Atlantic coasts*. Smithsonian Institution Press. Washington, D.C. 409 pp.

Hester, M.W., and I.A. Mendelssohn. 1989. *Water relations and growth response of Uniola paniculata (sea oats) to soil moisture and water-table depth*. Oecologia. 78(3):298-296.

Mendelssohn, I.A., M.W. Hester, F.J. Monteferrante, and F. Talbot. 1991. *Experimental dune building and vegetative stabilization in a sand-deficient barrier island, setting on the Louisiana coast, USA*. Journal of Coastal Research. 7 (1): 137-149.

Radford, A.E., H.E. Ahles, & C.R. Bell. 1976. *Manual of the vascular flora of the Carolinas*. University of North Carolina Press. Chapel Hill. 1183 pp.

Sylvia, D.M. 1986. *Spatial and temporal distribution of vesicular-arbuscular mycorrhizal fungi associated with Uniola paniculata in Florida foredunes* Mycologia 78 (5): 728-734.

USDA, NRCS. 2006. *The PLANTS database* (http://plants.usda.gov, 27 December, 2006). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, SCS. 1984. *Plants for coastal dunes of the Gulf and South Atlantic coasts and Puerto Rico*. Agricultural Bulletin 460. U.S. GPO: 1984—445-394. 41 pp.

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